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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,740	10/01/2001	Keiiti Ogura	12732-077001/US5246	3604

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EXAMINER	
DONG, DALEI	

ART UNIT	PAPER NUMBER
2875	

DATE MAILED: 12/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/966,740	OGURA ET AL.	
	Examin r	Art Unit	
	Dalei Dong	2875	

-- The MAILING DATE of this communication appears on the cover sheet with th correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 22 September 2003.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-49 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-49 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 01 October 2001 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/966,740.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,990,615 to Sakaguchi in view of U.S. Patent No. 5,962,962 to Fujita.

Regarding to claims 1-5, Sakaguchi discloses in Figure 1, an organic EL element comprising "a transparent anode layer 2 of indium tin oxide (ITO) is formed on a glass substrate 1 by using a sputtering method, and a hole injection-transport layer 3, a light emission layer 4, an electron transport layer 6 and a cathode 7 are subsequently formed on the anode layer 2 by using vacuum deposition method" (column 2, line 35-40).

Sakaguchi also discloses in Figure 1, "an insulative protective layer 8 for the organic EL element, oxide insulator such as SiO, MgO or Al_2O_3 is deposited on the cathode 7 by a vacuum deposition method with a thickness of 10 nm to 100 nm so as to cover all of upper surface of the cathode and side surfaces of its laminated body including from the hole-injection-transport layer 3 to the cathode 7" (column 2, line 41-47).

Sakaguchi further discloses in Figure 1, "as a method of sealing the thus prepared EL element body, a sealing member 9 having a cap structure is provided at the peripheral portion of the element, an an inert liquid 12 comprising a fluorocarbon such as

perfluoroalkane or perfluoroamine with which a dehydrating agent 10 and/or an oxygen absorber 11 is/are mixed is filled therein. The sealing member can be made of metal or glass" (column 3, line 9-15).

However, Sakaguchi does not disclose the absorption film is a hygroscopic film. Fujita teaches, "a protective layer is formed on the periphery of a device having the above layer structure to cover the device, for preventing the infiltration of water into the device" (column 12, line 3-6).

Fujita also teaches "specific examples of the material for the protective layer include a copolymer obtained by copolymerizing a monomer mixture containing tetrafluoroethylene and at least one comonomer, a fluorine-containing copolymer of which the copolymer main chain contains a cyclic structure, polyethylene, polypropylene, polymethyl methacrylate, polyimide, polyurea, polytetrafluoroethylene, polychlorotrifluoroethylene, polydichlorodifluoroethylene, a copolymer from chlorotrifluoroethylene and dichlorodifluoroethylene, a water-absorption substance having a water absoprtion ratio of at least 1%, a humidity-preventive substance having a water absorption ratio of 0.1% or less, metals such as In, Sn, Pb, Au, Cu, Ag, Al, Ti and Ni, metal oxides such as MgO, SiO, SiO.sub.2, Al.sub.2 O.sub.3, GeO, NiO, CaO, BaO, Fe.sub.2 O.sub.3, Y.sub.2 O.sub.3 and TiO.sub.2, and metal fluorides such as MgF.sub.2, LiF, AlF.sub.3 and CaF.sub.2" (column 13, line 63-67 to column 14, line 1-11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilize the protection layer of Fujita for the organic EL element of Sakaguchi in order to eliminate and prevent the moisture and undesired gas

from infiltrating the light-emitting element and reduce the formation of black spot and thus prevent the oxidation by absorb the moisture within the device and furthermore prolong the lifetime of the device.

3. Claims 6-17 and 23-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,990,615 to Sakaguchi in view of U.S. Patent No. 5,962,962 to Fujita in further view of U.S. Patent No. 5,811,177 to Shi.

Regarding to claims 6-17, 23-33 and 36-41, Sakaguchi discloses in Figure 1, an organic EL element comprising "a transparent anode layer 2 of indium tin oxide (ITO) is formed on a glass substrate 1 by using a sputtering method, and a hole injection-transport layer 3, a light emission layer 4, an electron transport layer 6 and a cathode 7 are subsequently formed on the anode layer 2 by using vacuum deposition method" (column 2, line 35-40).

Sakaguchi also discloses in Figure 1, "an insulative protective layer 8 for the organic EL element, oxide insulator such as SiO, MgO or Al_2O_3 is deposited on the cathode 7 by a vacuum deposition method with a thickness of 10 nm to 100 nm so as to cover all of upper surface of the cathode and side surfaces of its laminated body including from the hole-injection-transport layer 3 to the cathode 7" (column 2, line 41-47).

Sakaguchi further discloses in Figure 1, "as a method of sealing the thus prepared EL element body, a sealing member 9 having a cap structure is provided at the peripheral portion of the element, an an inert liquid 12 comprising a fluorocarbon such as perfluoroalkane or perfluoroamine with which a dehydrating agent 10 and/or an oxygen

absorber 11 is/are mixed is filled therein. The sealing member can be made of metal or glass" (column 3, line 9-15).

It is old and well known in the art to enclose a light-emitting element in opposing substrate with a sealant in order to provide protection and easy handling of the light-emitting device. However, Sakaguchi does not disclose the absorption film is a hygroscopic film and a passivation film formed over the connection wiring and the absorption film. Fujita teaches, "a protective layer is formed on the periphery of a device having the above layer structure to cover the device, for preventing the infiltration of water into the device" (column 12, line 3-6).

Fujita also teaches "specific examples of the material for the protective layer include a copolymer obtained by copolymerizing a monomer mixture containing tetrafluoroethylene and at least one comonomer, a fluorine-containing copolymer of which the copolymer main chain contains a cyclic structure, polyethylene, polypropylene, polymethyl methacrylate, polyimide, polyurea, polytetrafluoroethylene, polychlorotrifluoroethylene, polydichlorodifluoroethylene, a copolymer from chlorotrifluoroethylene and dichlorodifluoroethylene, a water-absorption substance having a water absoprtion ratio of at least 1%, a humidity-preventive substance having a water absorption ratio of 0.1% or less, metals such as In, Sn, Pb, Au, Cu, Ag, Al, Ti and Ni, metal oxides such as MgO, SiO, SiO.sub.2, Al.sub.2 O.sub.3, GeO, NiO, CaO, BaO, Fe.sub.2 O.sub.3, Y.sub.2 O.sub.3 and TiO.sub.2, and metal fluorides such as MgF.sub.2, LiF, AlF.sub.3 and CaF.sub.2" (column 13, line 63-67 to column 14, line 1-11).

However, Fujita fails to teach a passivation film formed over the connection wiring and the absorption film. Shi teaches in Figure 3, "third and fourth steps in the passivation of array 11 in accordance with the present invention are illustrated in FIG. 3. Buffer layer 22 is in turn covered or coated with a thermal coefficient matching layer 24, which is a second layer in the buffer system. In a further step in the passivation process, thermal coefficient matching layer 24 is coated or covered with a low permeability inorganic layer 26, generally as illustrated in FIG. 3. Thermal coefficient matching layer 24 is generally included in the buffer system. Thermal coefficient matching layer 24 has a lower CTE than inorganic layer 26 so as to partially match the CTE of buffer layer 22, so as to reduce thermal stresses therebetween due to thermal cycling" (column 3, lines 41-53).

Shi also teaches in Figure 3, "some typical examples of thermal coefficient matching layer 24 and inorganic layer 26 are listed below. An active metal, such as lithium (Li) or magnesium (Mg) is utilized as thermal coefficient matching layer 24, acting as a gettering material to absorb trapped gasses within the inorganic layer. In a somewhat different embodiment, silicon dioxide (SiO.sub.2) or a low work function metal, such as lithium (Li) or magnesium (Mg), is utilized as thermal coefficient matching layer 24. A stable metal, such as one of aluminum (Al) or indium (In) is utilized as inorganic layer 26" (column 3, lines 54-63).

Shi further teaches in Figure 3, "it should be understood that thermal coefficient matching layer 24 could include sub-layers of one or more of the above, or similar, materials so as to provide a combination of the functions. Also, the thicknesses of

thermal coefficient matching layer 24 and inorganic layer 26 generally, in combination, is in the range of approximately 0.05 to 10 micron, but should be thick enough to perform the desired functions. If multiple sub-layers are utilized, the overall thickness is generally similar to that of a single layer" (column 3, line 64 to column 4, line 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilize the protection layer of Fujita and the passivation film to cover the wiring and the extend beyond the sealant of Shi for the organic EL element of Sakaguchi in order to eliminate and prevent the moisture and undesired gas from infiltrating the light-emitting element and reduce the formation of black spot and thus prevent the oxidation by absorb the moisture within the device and furthermore prolong the lifetime of the device.

Regarding to claims 34 and 35, Sakaguchi discloses a protective insulating layer for the organic EL element. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have dispose a layer of the protective insulating layer of Sakaguchi on the second substrate or casing of the organic EL element of Sakaguchi in order to prevent the moisture and undesired gas from infiltrating the light-emitting element and reduce the formation of black spot and thus prevent the oxidation by absorb the moisture within the device and furthermore prolong the lifetime of the device.

4. Claims 18-22 and 42-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,684,365 to Tang in view of U.S. Patent No. 5,962,962 to Fujita.

Regarding to claims 18-22 and 42-49, Tang discloses in Figures 2 and 3, the construction of the electroluminescent device comprising an substrate of this device is an insulating and preferably transparent material such as quartz or a low temperature glass; TFT1 is the logic transistor with the source bus (column electrode) as the data line and the gate bus (row electrode) as the gate line. TFT2 is the EL power transistor in series with the EL element. The gate line of TFT2 is connected to the drain of TFT1. The storage capacitor is in series with TFT1. The anode of the EL element is connected to the drain of TFT2.

Tang also discloses "in another embodiment, the EL cathode is a bilayer composed of a lower layer of a low work function metal adjacent to the organic electron injecting and transporting zone and, overlying the low work function metal, a protecting layer that protects the low work function metal from oxygen and humidity. Optionally, a passivation layer may be applied over the EL cathode layer" (column 10, line 8-14).

However, Tang does not disclose the absorption film is a hygroscopic film. Fujita teaches, "a protective layer is formed on the periphery of a device having the above layer structure to cover the device, for preventing the infiltration of water into the device" (column 12, line 3-6).

Fujita also teaches "specific examples of the material for the protective layer include a copolymer obtained by copolymerizing a monomer mixture containing tetrafluoroethylene and at least one comonomer, a fluorine-containing copolymer of

which the copolymer main chain contains a cyclic structure, polyethylene, polypropylene, polymethyl methacrylate, polyimide, polyurea, polytetrafluoroethylene, polychlorotrifluoroethylene, polydichlorodifluoroethylene, a copolymer from chlorotrifluoroethylene and dichlorodifluoroethylene, a water-absorption substance having a water absoprtion ratio of at least 1%, a humidity-preventive substance having a water absorption ratio of 0.1% or less, metals such as In, Sn, Pb, Au, Cu, Ag, Al, Ti and Ni, metal oxides such as MgO, SiO, SiO.sub.2, Al.sub.2 O.sub.3, GeO, NiO, CaO, BaO, Fe.sub.2 O.sub.3, Y.sub.2 O.sub.3 and TiO.sub.2, and metal fluorides such as MgF.sub.2, LiF, AlF.sub.3 and CaF.sub.2" (column 13, line 63-67 to column 14, line 1-11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have utilize the protection layer of Fujita for the organic EL element of Tang in order to eliminate and prevent the moisture and undesired gas from infiltrating the light-emitting element and reduce the formation of black spot and thus prevent the oxidation by absorb the moisture within the device and furthermore prolong the lifetime of the device.

Response to Arguments

5. Applicant's arguments with respect to claims 1-49 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalei Dong whose telephone number is (703)308-2870. The examiner can normally be reached on 8 A.M. to 5 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (703)305-4939. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

D.D.
November 21, 2003

Sandra O'Shea
Supervisory Patent Examiner
Technology Center 2800